UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

DATE: JUL 2 8 2004

SUBJECT: Remedial Action Work Plan for Source Reduction, L.E. Carpenter Superfund Site, Wharten, NJ

FROM: Seth Ausubel, Chief
Freshwater Protection Section

TO: Kim O' Connell, Chief
Southern New Jersey Remediation Section

The Freshwater Protection Section (FPS) has reviewed the above document and provides the following comments

General Overview:

The remedial action for the site consists of the following: the excavation of all lead and process waste soils above 400 ppm of lead and 600ppm of copper, the excavation of all PCB impacted soils above 2 ppm, and the removal or remediation of soils contaminated with LNAPLs as practicable. Continued groundwater monitoring will be conducted to evaluate if Monitored Natural attenuation (MNA) is a viable alternative to the pumping and treatment of the contaminated shallow groundwater that was part of the1994 ROD.

There is still insufficient soil and groundwater characterization data to properly delineate the extent of the lead and free product contamination in the impacted soils and potential migration pathways and the adequacy of the soil excavation or source reduction work plan. The work plan should include a predesign investigation of the groundwater elevations and flow patterns between the site and the river. More cross sections intersecting the excavation area and aligned along the river boundary of the excavation area could be added to better illustrate the stratigraphy and extent of the contaminated soils. There should be additional confirmatory sampling of the excavation walls to rule out if any contaminated soils possibly extend further toward the river. The post remediation monitoring plan must include geochemical data from additional monitoring wells to evaluate the natural attenuation of lead and LNAPLs and if its effectively remediating the residual contamination. An investigation of the potential groundwater discharge zones into the river bed should be considered if LNAPLs or significant lead contamination is detected in the groundwater near the river.

Specific Comments

1. In the work plan more water elevation data needs to be collected around the excavation and adjacent areas along the river. Only monthly water elevation trend charts just up to 11/03 are provided with no evaluation of the water table variations across the site. There is no information on the number and distribution of well points screened in the shallow aquifer within and surrounding the excavation area (figure 6). In the smear soils, defined as the soils with sorbed LNAPL residual products, precise shallow aquifer data is critical because the soils above the water table will be physically excavated while the saturated soils will be remediated by a complicated slurry process. Watertable maps of the shallow aquifer should be provided along with a detailed determination of the groundwater flow for the excavation area and the area along the Rockaway River. The seasonally high water table is relatively close to the ground surface across most of the site and varies between 5 and 15 feet below the surface. This variation will significantly impact the excavation depth. The excavation should extend to the seasonally low water table.

2. The site investigation included only one geologic cross section A-A' which intersect the center of the excavation area in an east to west orientation. It poorly illustrated the lead impacted, smear zone, and clean soils especially along the excavation area bordering the Rockaway River (Figure 18). Additional cross sections intersecting the site oriented toward the river with a cross section paralleling the river along the border of the excavation area will better illustrate the extent of the contaminated soils. A more accurate delineation of these soils throughout the excavation area will make it easier to calculate how contaminated soil has to be removed to insure no inadvertent impacts to the river.

3. The preconstruction soil borings may not be optimally located within and surrounding the excavation area to confirm the horizontal extent and thicknesses of the NAPL smear zone, lead contaminated, and clean soils(figure 31). The confirmatory PCB and metal sampling is only planned at grid sampling points across the floor of the excavation area. This provides no confirmation on the extent of contaminated soils beyond the periphery of the excavation area. Additional confirmation sampling along the outside walls of the excavation areas is needed to evaluate to effectiveness of the soil excavation and slurry remediation.

4. The text already assumes that the proposed groundwater long term monitoring plan will confirm MNA as viable alternative to the current ROD remedy or the pump and treat of the shallow groundwater(section 9.1). The monitoring has to demonstrate that ongoing natural attenuation mechanisms are sufficient in the soils and groundwater to reduce LNAPLs and lead in the groundwater to ARARS and to prevent any further impacts to the river. If the monitoring results show inadequate reductions in lead concentrations more geochemical and hydrogeological data from supplemental wells may be needed between the excavation area and the river. This data is important because the river oscillates between losing and gaining shallow groundwater in the area of the site. The excavation of free product and lead contaminated soils may temporally increase infiltration of surface water and change localized groundwater flow patterns near the river. We recommend that additional monitoring wells be placed between the excavation area and the river to detect any unexpected contaminated groundwater discharge into the river.

5. Additional geochemical data, besides pH and Eh values, should be obtained from the monitoring wells along the river to assure that there is no unexpected lead contamination of the groundwater and surface water which is not predicted by the synthetic precipitation leaching procedure (SPLP) test results and/or the groundwater sampling results. Unfavorable changes in the dissolved oxygen, total dissolved carbon, speciation of iron, sulfur, or nitrogen in the soil or groundwater may be evidence of lead and possibly LNAPLs leaching into or migrating in the groundwater. These changes could affect the sorption and ion exchange capacities of the aquifer matrix for metals in addition to affecting the aquifer's buffering capacity. It is important to determine the mass of lead that is dissolved in the groundwater, and the mass of lead that is sorbed and precipitated within both the suspended solids and the aquifer matrix.

6. The long term monitoring plan confirming natural attenuation must demonstrate the following:

* There are no changes in the pH, hydraulic gradients, oxygen levels and, organic carbon that would inhibit remedy effectiveness

* The contaminated groundwater is not expanding both horizontally or vertically

* No lead, LNAPLs and other site related contaminants are reaching down gradient receptors such as the Rockaway River.

* No unexpected sources of lead and LNAPLs

* No formation of toxic transformation products such as organic lead complexes

This performance monitoring should continue for a specified period of at least two years, after cleanup levels have been achieved and in at least two additional wells between the excavation sites and the Rockaway River. The monitoring must be long enough to assure that no re-contamination is occurring in the groundwater and that there is no subsequent discharge of lead or LNAPLs into the river. In case the excavation and NMA remedy fail to perform as anticipated a Contingency plan should be in place, such as the original ROD remedy of pumping and treating the groundwater outlined in the 1994 ROD.

7. In case lead or LNAPLs are detected by the long term monitoring of the groundwater, a possible contingency plan could be to sample the river bottom for potential areas of groundwater discharge. Seepage meters or buried passive bag sampling would provide information on the pore water data from the river bottom. When compared to known groundwater characteristics, particularly temperature, this pore water data can identify areas of groundwater discharge. Several transects or grids of seepage meters could be placed in parts of the river suspected to be impacted by contaminated groundwater migrating from the site. The placement of these transects depends on an adequate analysis of the vertical and horizontal groundwater flow patterns and an initial temperature profile screening of the river bottom.

If you have any questions regarding the above comments please contact Frank Scotto at Ext. 7-3849.

cc: Stephen Cipot, ERRD/NJRB